REMARKS

Status of the Application

Claim 8 was objected to. Claim 1-14 were rejected under 35 U.S.C. 101 as being directed to nonstatutory subject matter. Claim 1-4, 6, 8, 9-11 and 13 were rejected under 35 U.S.C. 102(e) as being anticipated by West et al. (US Patent 6,438,493). Claim 5, 7, 12, and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over West et al. (US Patent 6,438,493) in view of Doyle et al. (US Patent 5,504,479). Claims 1, 3, 8 and 10 have been amended. No new subject matter has been added.

Claim Objections

Applicant amended claim 8 as suggested by the examiner.

35 U.S.C. §101 Rejections

Applicant amended claims 1, 3, 8 and 10 to include the tangible result of having the inferred classes stored. Such storage system and method is already clearly shown in Fig. 1.

35 U.S.C. §102 Rejections

The applicant respectfully traverses each and every one of the 35 U.S.C. 102(e) rejections because the cited reference does not disclose all of the elements of the independent claims of the present invention.

Regarding claim 1, West et al. does not teach or suggest "a system for inferring geological classes".

The "seismic facies" of the West document are listed in col. 5, lines 17-24 and in Figs. 3B -3F. Seismic facies are derived from the seismic texture which "is a quantitative measure of the reflection amplitude, continuity, and internal configuration of reflectors" (col. 4, lines 10-16). West et al. lists a number of examples:

> *"Examples of facies classifications typically used in the present invention , but are not limited to, high amplitude continuous (HAC), high amplitude semi- continuous (HASC, moderate amplitude continuous (MAC), moderate amplitude semi-continuous (MASC), low amplitude continuous (LAC), low amplitude semi-continuous (LASC), chaotic, and transparent. "* (see West, col. 5, lines 17-24)

It is obvious for the skilled person that these classification are not geological classifications but more accurately described as classifying the way an earth formation appears on a seismic image. In contrast, it is stated in the present application:

> *"According to the present invention, the terms "geological classes" or "CLASSES" refers to, principally, the rock facies (lithofacies) or the reservoir rock types. However, any other discrete classification of geological features (e.g. petrophysical properties) is possible. "* (see page 1)

The term "geological classes" is hence to be interpreted as a classification according to "geological features" such as the type of rock (limestone, clay, etc). The seismic facies of West et al are a characterization according to the response of the rock to acoustic waves.

Further regarding claim 1, West et al. does not teach or suggest using "input data from oilfield wells".

Seismic data are commonly acquired from the surface. Though there are seismic data acquired from wellbore, West et al, refer in the background section to "basin-wide scale" or single reservoir" implying a normal surface seismic data.

Further regarding claim 1, West et al. does not teach or suggest using "class sequencing knowledge".

The examiner appears to equate "full stack data" as mentioned in West et al. with "class sequencing knowledge". In seismic acquisition, the term "stacking" is used as expression for the adding of seismic recordings to reduce the signal-to-noise ratio. It is clear that this signal processing step in seismics has no relationship of "geological class sequencing knowledge", which should be interpreted as knowledge of the sequence of geological classes in a section of the earth.

In summary, West et al does not teach at least the following three elements of the independent claims 1, 3, 8 and 10: "Geological Classes", "Input from oilfield wells", and "Integration of geological class sequencing knowledge" . The examiner has interpreted many terms clearly limited in West et al to a seismic characterization method, to read on the present claim. The applicant has provided above a more accurate description of these terms.

35 U.S.C. §103 Rejections

In light of at least three important elements of the independent claims missing, the applicant further respectfully traverses each and every one of the 35 U.S.C. 103(a) rejections because the cited reference does not disclose all of the elements of the independent claims of the present invention.

Further Doyle et al. relates to the field of communication data from a well bore. *Prima facie*, the field of data communication, even if related to communication from a wellbore,

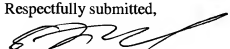
is not related to the field of inferring a geological classification. The examiner has not shown how a skilled person would be motivated to combine the teaching of West et al. , which relates to seismic data interpretation, with the teaching of Doyle et al., which relates to data communication from the wellbore to the surface, to arrive at a method for using Viterbi algorithms to infer a geological classification.

Further, Doyle et al. states clearly that the use of Viterbi algorithm in the decoder is motivated strictly as a requirement (col. 13, lines 58-60) for "Trellis encoding" (col. 13, lines 58-60). Trellis encoding is a known method in data communication. Again, this specific use of the Viterbi algorithm has no recognizable relationship with a geological application as the present invention.

Conclusion

In light of the above claim amendments and remarks, the applicant believes that the present application is in proper condition for allowance and such allowance is earnestly requested. If the Examiner is contemplating any action other than allowance of all pending claims, the Examiner is urged to contact Applicant's representative, Edward M. Bushard, at (617) 768-2271.

Respectfully submitted,



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